

# Alexander Rossi Miller

E-mail        alexander.r.miller@univie.ac.at

Homepage    www.armiller.org

## Positions Held

- 2022–        Visiting Researcher, Universität Kaiserslautern, Germany
- 2017–2020   Member, Universität Wien, Vienna, Austria
- 2017        Visiting Scientist, Institut Henri Poincaré, Paris, France
- 2014–2017   J. L. Doob Research Assistant Professor, University of Illinois

## Education

- 2013        Ph.D. in Mathematics, University of Minnesota

## Publications

- 19.    The characters of symmetric groups that depend only on length  
      Alexander R. Miller  
      *Math. Z.*, in press
- 18.    Zeros and roots of unity in character tables  
      Alexander R. Miller  
      *Enseign. Math.*, in press
- 17.    On Foulkes characters  
      Alexander R. Miller  
      *Math. Ann.* **381** (2021) 1589–1614
- 16.    The sparsity of character tables of high rank groups of Lie type  
      Michael J. Larsen and Alexander R. Miller  
      *Represent. Theory* **25** (2021) 173–192
- 15.    Congruences in character tables of symmetric groups  
      Alexander R. Miller  
      *Preprint*
- 14.    Many zeros of many characters of  $GL(n, q)$   
      Patrick X. Gallagher, Michael J. Larsen, and Alexander R. Miller  
      *Int. Math. Res. Not. IMRN* **2022** 4376–4386
- 13.    Dense proportions of zeros in character values  
      Alexander R. Miller  
      *C. R. Math. Acad. Sci. Paris* **357** (2019) 771–772

12. Character restrictions and reflection groups  
Eugenio Giannelli and Alexander R. Miller  
*J. Algebra* **531** (2019) 336–348
11. On parity and characters of symmetric groups  
Alexander R. Miller  
*J. Combin. Theory, Ser. A* **162** (2019) 231–240
10. Walls in Milnor fiber complexes  
Alexander R. Miller  
*Doc. Math.* **23** (2018) 1247–1261
9. Orthogonal polynomials and Smith normal form  
Alexander R. Miller and Dennis Stanton  
*Monatsh. Math.* **187** (2018) 125–145
8. Some characters that depend only on length  
Alexander R. Miller  
*Math. Res. Lett.* **24** (2017) 879–891
7. Eigenspace arrangements of reflection groups  
Alexander R. Miller  
*Trans. Amer. Math. Soc.* **367** (2015) 8543–8578
6. Foulkes characters for complex reflection groups  
Alexander R. Miller  
*Proc. Amer. Math. Soc.* **143** (2015) 3281–3293
5. The probability that a character value is zero for the symmetric group  
Alexander R. Miller  
*Math. Z.* **277** (2014) 1011–1015
4. Reflection arrangements and ribbon representations  
Alexander R. Miller  
*Ph.D. Thesis*, 2013  
*European J. Combin.* **39** (2014) 24–56
3. Differential posets have strict rank growth: a conjecture of Stanley  
(Positively answers 25-year-old question of R. P. Stanley from 1988 in JAMS)  
Alexander R. Miller  
*Order* **30** (2013) 657–662
2. Note on 1-crossing partitions  
M. Bergerson, A. Miller, A. Pliml, V. Reiner, P. Shearer, D. Stanton, N. Switala  
*Ars Combinatoria* **99** (2011) 83–87
1. Differential posets and Smith normal forms  
Alexander R. Miller and Victor Reiner  
*Order* **26** (2009) 197–228

## Conference Proceedings

2. Vanishing results for character tables  
Alexander R. Miller  
in “Character Theory and Categorification”,  
*Oberwolfach Reports* **19** (2022), to appear
1. Milnor fiber complexes and some representations  
Alexander R. Miller  
in “Topology of Arrangements and Representation Stability”, pp. 43–123,  
*Oberwolfach Reports* **15** (2018)

## Selected Lectures

2023	July	Centre International de Rencontres Mathématiques, Marseille, France
2022	Aug	Darstellungstheorietage, Technische Universität Kaiserslautern, Germany
2022	Aug	Character Theory and Categorification, Oberwolfach, Germany
2021	Mar	Combinatorics Seminar, University of Southern California, Los Angeles
2020	Feb	Bern–Neuchâtel–Fribourg Intercity Seminar, Universität Bern, Switzerland
2019	Sep	Austrian Mathematical Society Conference, Dornbirn, Austria
2019	Jan	Combinatoire Énumérative et Analytic, Université Paris Diderot, Paris, France
2018	Nov	Einstein Workshop on Algebraic Combinatorics, Freie Universität Berlin, Germany
2018	May	Algebra & Representation Theory Seminar, University of Cambridge, UK
2018	Mar	Séminaire Lotharingien de Combinatoire, Institut Camille Jordan, Lyon, France
2018	Mar	Arbeitsgemeinschaft für Diskrete Mathematik, Technische Universität Wien, Austria
2018	Jan	Topology of Arrangements and Representation Stability, Oberwolfach, Germany
2017	Dec	Algebraic and Enumerative Combinatorics, SFB Statusseminar, Strobl, Austria
2017	Nov	Algebra und Algebraischen Kombinatorik, Leibniz Universität Hannover, Germany
2017	Sep	Séminaire Lotharingien de Combinatoire, Bertinoro, Italy
2017	May	Midwest Combinatorics Conference, University of Minnesota, Twin Cities, USA
2015	Oct	Enumerative Algebraic & Geometric Combinatorics, AMS Session, Chicago, USA
2013	Mar	Algebraic Combinatorics, AMS Special Session, Oxford, USA
2012	Oct	Combinatorics Seminar, University of Minnesota, Twin Cities, USA
2012	May	Combinatorics Seminar, University of Minnesota, Twin Cities, USA
2010	Apr	Combinatorial Representation Theory, AMS Special Session, St. Paul, USA
2009	Jan	Algebraic Combinatorics Seminar, Fields Institute, Toronto, Canada
2008	Mar	Combinatorics Seminar, University of Minnesota, Twin Cities, USA

## **Journals and Conferences Refereed**

Advances in Applied Mathematics  
Algebraic Combinatorics  
Canadian Mathematical Bulletin  
Discrete and Computational Geometry  
Discrete Mathematics  
Electronic Journal of Combinatorics  
Formal Power Series and Algebraic Combinatorics  
Journal of Algebraic Combinatorics  
Journal of Combinatorial Theory Series A  
Journal für die reine und angewandte Mathematik (Crelle's Journal)  
Order, a journal on the theory of ordered sets and its applications  
Proceedings of the American Mathematical Society  
SIAM Journal on Discrete Mathematics

## **Teaching Experience**

### **Courses taught at the University of Illinois**

2016 Fall Calculus III Honors (Math 241)  
2016 Fall Nonlinear Programming (Math 484)  
2016 Spg Conjugate Duality and Optimization (Math 589)  
2016 Spg Nonlinear Programming (Math 484)  
2015 Fall Nonlinear Programming (Math 484)  
2015 Spg Nonlinear Programming (Math 484)  
2014 Fall Fundamental Mathematics (Math 347)

### **Courses taught at the University of Minnesota**

2014 Spg Introduction to Modern Algebra (Math 4281)  
2013 Fall Calculus II (Math 1272)  
2013 Sum Applied Linear Algebra (Math 4242)  
2011 Fall Calculus II (Math 1272)  
2011 Sum Applied Linear Algebra (Math 4242)  
2009 Sum Calculus I (Math 1271)

### **Recitations led at the University of Minnesota**

2014 Spg CSE Linear Algebra and Differential Equations (Math 2373)  
2012 Fall Linear Algebra and Differential Equations (Math 2243)

2010 Spg Calculus I (Math 1271)

2010 Spg Honors Calculus II (Math 1572H)

2009 Fall Honors Calculus I (Math 1571H)

2009 Spg Sequences, Series, and Foundations: Writing Intensive (Math 3283W)

2008 Fall Sequences, Series, and Foundations: Writing Intensive (Math 3283W)

2008 Spg Honors Calculus IV (Math 2574H)

2007 Fall Honors Calculus III (Math 2573H)

### Teaching Awards

2008 Apr *John Bowers Excellence in Teaching Assistance Award*, University of Minnesota.  
 "...honors an outstanding teaching assistant who has demonstrated exceptional interest and commitment to the teaching of IT [Institute of Technology] students."

2008 Feb *Institute of Technology TA Award*, University of Minnesota.  
 "...one of three TA's that was voted best TA in the Institute of Technology. The voting was done completely by students in the Institute of Technology."